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## CLAIMS

99/7873

1. A mining machine, comprising:

a chassis;

a cutting mechanism; and

an actuation assembly affixed to said chassis and said cutting mechanism for selectively moving said cutting mechanism forward of said chassis, down across a surface to be mined and rearwardly towards said chassis, said actuation assembly comprising:

a cutting member support frame operably supporting at least one cutting member thereon;

a support member pivotally attached to said cutting member support frame such that said cutting member support frame is selectively pivotable relative to said support member about a first axis;

a first actuator attached to said support member and said mining machine chassis for selectively positioning said first axis relative to said mining machine chassis in a predetermined position; and

a first linkage assembly comprising a first link having one end pivotally attached to the cutting member support frame, and another end pivotally connected to a second actuator attached to said support member, and

a support link having one end pivotally attached to the support member, and another end pivotally attached to the first link and the second actuator for selectively pivoting said cutting member support frame relative to said support member about said first axis.

2. The mining machine of claim 1 wherein said cutting mechanism comprises at least one rotating cutting drum;  
at least one helical member attached to at least one said rotating cutting drum;  
and  
at least one cutting bit attached to at least one said helical member.

3. The mining machine of claim 1 wherein said cutting mechanism comprises:  
a support frame attached to said actuation assembly;  
an endless conveying member operably supported on said support frame and driven in an orbit thereon;  
a first rotating cutting drum having a first helical member thereon, said first rotating cutting drum operably affixed to said support frame adjacent a first side of said endless conveying member; and  
a second rotating cutting drum having a second helical member thereon and being affixed to said support frame adjacent a second side of said endless conveying member.

4. The mining machine of claim 3 wherein said first helical member, said second helical member and said endless conveyor member each have at least one cutting bit attached thereto.

5. The mining machine of claim 1 wherein each said first actuator is detachably affixed to said mining machine chassis.

6. The mining machine of claim 1 wherein said second actuator is pivotally attached to said support member.

7. The mining machine of claim 1 wherein said cutting member support frame operably supports an endless conveying member thereon and wherein said cutting member comprises:

a first rotating cutting drum having a first helical member thereon, said first rotating cutting drum operably affixed to said cutting member support frame adjacent a first side of said endless conveying member; and

a second rotating cutting drum having a second helical member thereon and being affixed to said cutting member support frame adjacent a second side of said endless conveying member.

8. The mining machine of claim 7 wherein said first helical member, said second helical member and said endless conveying member each have at least one cutting bit attached thereto.

9. The mining machine of claim 1 further comprising at least one bolter attached to said mining machine chassis.

10. The mining machine of claim 1 further comprising an attachment assembly attached to said chassis and said cutting mechanism to enable said cutting mechanism to be

selectively detached from said chassis.

11. The mining machine of claim 10 wherein said attachment assembly comprises:  
at least one attachment lug protruding from said cutting mechanism; and  
a locking member supported by said chassis for selective engagement with each said attachment lug to detachably affix said first linkage assembly to said chassis.

12. The mining machine of claim 10 wherein said attachment assembly comprises  
a first attachment plate attached to said cutting mechanism and having at least one attachment lug protruding therefrom, each attachment lug having a first hole extending therethrough;

a second attachment plate attached to said chassis and having receptacles corresponding to each said attachment lug for receiving said corresponding attachment lug therein;

a pair of coaxially aligned apertures through said second attachment plate adjacent said receptacles such that when each said attachment lug is received in said corresponding receptacle, the first hole through said attachment lug is coaxially aligned with said adjacent coaxially aligned apertures in said second attachment plate; and

a retaining pin corresponding to each said pair of attachment lugs and being removably insertable into said coaxially aligned apertures in said second attachment plate and said coaxially aligned holes through said corresponding attachment lugs to removably affix said

first attachment plate to said second attachment plate.

13. The mining machine of claim 10 wherein said attachment assembly comprises:  
at least one attachment lug protruding from the chassis; and  
a locking member supported by said cutting mechanism for selective engagement with  
said attachment lugs to detachably affix said cutting mechanism to said chassis.

14. The mining machine of claim 13 further comprising:  
a first attachment plate attached to said chassis and having an attachment lug  
protruding therefrom, each said attachment lug having a first hole therethrough;  
a second attachment plate attached to said cutting mechanism and having receptacles  
corresponding to each said attachment lug for receiving said corresponding attachment lug  
therein;  
a pair of coaxially aligned apertures through said second attachment plate adjacent said  
receptacles such that when each said attachment lug is received in said corresponding  
receptacle, the first hole through said attachment lug is coaxially aligned with said coaxially  
aligned apertures in said second attachment plate; and  
a retaining pin corresponding to each said pair of attachment lugs and being removably  
insertable into said coaxially aligned apertures in said second attachment plate and said  
coaxially aligned holes through said corresponding attachment lugs to removably affix said  
first attachment plate to said second attachment plate.

15. The mining machine of claim 1 wherein said chassis defines an operator area and wherein said mining machine further comprises a vertically extending shield attached to said chassis and located between said cutting mechanism and said operator area.

16. The mining machine of claim 15 wherein said vertically extending shield comprises:

a first upstanding shield member supported on said chassis;

a second upstanding shield member supported adjacent said first upstanding shield plate for selective vertical movement relative to said first shield member; and

at least one extender affixed to said chassis and said second upstanding shield member, said extenders constructed to selectively extend and retract said second shield member vertically relative to said first shield member.

17. The mining machine of claim 15 wherein said chassis has two lateral sides and wherein said cutting mechanism cuts an entry having lateral side walls in the material to be mined and wherein said mining machine further comprises a selectively extendable lateral shield member attached to each said lateral side of said chassis for selective sealing engagement with a corresponding side wall of the entry.

18. The mining machine of claim 15 further comprising at least one viewing

window in said vertically extending shield.

19. The mining machine of claim 15 further comprising at least one video camera attached to said vertically extending shield.

20. A detachable mining apparatus for selective attachment to a mining machine having a mining machine chassis, said detachable mining apparatus comprising:

a cutting mechanism; and

an actuation assembly removably attachable to said chassis and said cutting mechanism for selectively moving said cutting mechanism forward of said chassis and down across a surface to be mined, said actuation assembly comprising:

a cutting member support frame operably supporting at least one cutting member thereon;

a support member pivotally attached to said cutting member support frame such that said cutting member support frame is selectively pivotable relative to said support member about a first axis;

a first actuator attached to said support member and said mining machine chassis for selectively positioning said first axis relative to said mining machine chassis in a predetermined position; and

a first linkage assembly comprising a first link having one end pivotally attached to the cutting member support frame, and another end pivotally connected to a second actuator attached to said support member, and

a support link having one end pivotally attached to the support member, and



another end pivotally attached to the first link and the second actuator for selectively pivoting said cutting member support frame relative to said support member about said first axis.

21. The detachable mining apparatus of claim 20 wherein said cutting mechanism comprises at least one rotating cutting drum;  
at least one helical member attached to at least one said rotating cutting drum;  
and  
at least one cutting bit attached to at least one said helical member.

22. The detachable mining apparatus of claim 20 wherein said cutting mechanism comprises:  
a support frame attached to said actuation assembly;  
an endless conveying member operably supported on said support frame and driven in an orbit thereon;  
a first rotating cutting drum having a first helical member thereon, said first rotating cutting drum operably affixed to said support frame adjacent a first side of said endless conveying member; and  
a second rotating cutting drum having a second helical member thereon and being affixed to said support frame adjacent a second side of said endless conveying member.

23. The detachable mining apparatus of claim 22 wherein said first helical member, said second helical member and said endless conveyor member each have at

least one cutting bit attached thereto.

24. A machine according to claim 1, substantially as herein described and illustrated.

25. An apparatus according to claim 20, substantially as herein described and illustrated.

26. A new machine or a new apparatus substantially as herein described.

DATED THIS 23RD DAY OF DECEMBER 1999

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DATED THIS 12TH DAY OF MARCH 2001

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